B A R R E T T

BARRETT FIREARM MANUFACTURING, INC.

OPERATOR'S MANUAL

.50 Caliber Rifle
M82A1

BARRETT FIREARMS MANUFACTURING, INC.
P.O. BOX 1077
MURFREESBORO, TN 37133-177
TELEPHONE 615-896-2938
FAX 615-896-7313
E-MAIL: mail@barrettrifles.com

TABLE OF CONTENTS

		PAGE
CHAPTER I	**INTRODUCTION**	**1**
1.1	GENERAL INFORMATION	1
1.2	EQUIPMENT DESCRIPTION AND DATA	1
1.2.1	EQUIPMENT SPECIFICATIONS AND CAPABILITIES	1
1.2.2	IDENTIFICATION AND DESCRIPTION OF MAJOR COMPONENTS	3
1.2.3	ASSOCIATED EQUIPMENT	4
1.3	PRINCIPLES OF OPERATION	5
1.3.1	GENERAL FUNCTIONING	5
1.3.2	FEEDING	6
1.3.3	CHAMBERING	6
1.3.4	LOCKING	6
1.3.5	FIRING	7
1.3.6	UNLOCKING	7
1.3.7	COCKING	8
1.3.8	EXTRACTION	8
1.3.9	EJECTION	9
1.3.10	SAFETY MECHANISM	9
CHAPTER 2	**MAINTENANCE OF THE RIFLE**	**10**
2.1	INITIAL INSPECTION AND ASSEMBLY	10
2.1.1	INSPECTION – RIFLE'S MAJOR GROUPS	10
2.1.1.1	INSPECTION - THE UPPER RECEIVER	11
2.1.1.2	INSPECTION - THE BOLT CARRIER GROUP	12
2.1.1.3	INSPECTION - LOWER RECEIVER	13
2.1.2	ASSEMBLY OF MAJOR GROUPS	14
2.2	LOADING	18
2.3	UNLOADING RIFLE AND MAGAZINE	20
2.3.1	UNLOADING RIFLE	20
2.3.2	UNLOADING MAGAZINE	20
2.4	PREVENTIVE MAINTENANCE PROCEDURES	20
2.4.1	GENERAL MAINTENANCE	20
2.4.2	SPECIFIC MAINTENANCE	21
2.5	GENERAL CLEANING INSTRUCTIONS	21
2.5.1	AFTER FIRING CLEANING INSTRUCTIONS	22
2.5.2	RIFLE CLEANING SCHEDULE	22
2.6	TROUBLESHOOTING	23
2.7	COMPONENT REPLACEMENT INTERVAL	24
CHAPTER 3	**DISASSEMBLY / ASSEMBLY PROCEDURES**	**25**
3.1	DISASSEMBLY / ASSEMBLY OF MAJOR PARTS OF RIFLE	25
3.2	MUZZLE BRAKE REMOVAL	26
3.3	REMOVAL OF BARREL KEY, BARREL SPRINGS, BARREL BUMPERS	27
3.4	INSTALLATION OF BARREL SPRINGS, BARREL BUMPERS AND BARREL KEY	28
3.5	MUZZLE BRAKE INSTALLATION	30
	WARRANTY AND LIABILITY INFORMATION	31

CHAPTER 1
INTRODUCTION

1.1 GENERAL INFORMATION

TYPE OF MANUAL: Operator's instruction manual for fifty caliber Barrett model 82A1 rifle.

PREPARATION FOR STORAGE OR SHIPMENT. Except in extreme situations, the M82A1 should always be stored and transported in its airtight, watertight carrying case.

RIFLE REPAIR. Rifle repair will be accomplished by Barrett Firearms Manufacturing, Inc. In the event the M82A1 requires repair, it is to be sent as a complete assembly, packaged as described above.

1.2 EQUIPMENT DESCRIPTION AND DATA

1.2.1 EQUIPMENT SPECIFICATIONS AND CAPABILITIES. The technical specifications and capabilities of the M82A1 (Figure 1-1) are listed in Table 1-1.

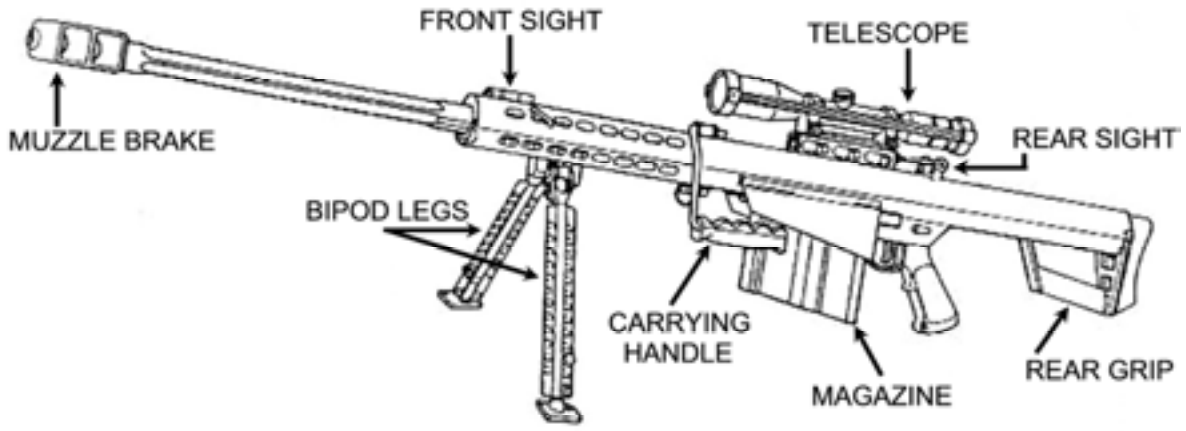


Figure 1-1. Rifle, M82A1, with Telescopic Sight

Table 1-1. Specifications and Capabilities

SPECIFICATIONS	
Caliber:	.50 BMG 12.7 x 99 mm
Weight:	30 lbs (13.6 kg) unloaded
Overall Length: (Assembled)	57 in (145 cm)
Length: (Takedown Mode)	38 in (96.5 cm)
Barrel Length:	29 in (74 cm)
Magazine Capacity:	10 rounds
Stock:	Integral with Lower receiver – steel
Safety:	Manual thumb-lever
Sights:	Fixed front, Adjustable rear sights
Scope:	As specified by customer

CAPABILITIES	
Muzzle Velocity:	Approximately 2850 f/s (853 m/s) with standard 660 grains (42.8 g) projectile
Maximum Range:	Approximately 6,800 meters

1.2.2 IDENTIFICATION AND DESCRIPTION OF MAJOR COMPONENTS.

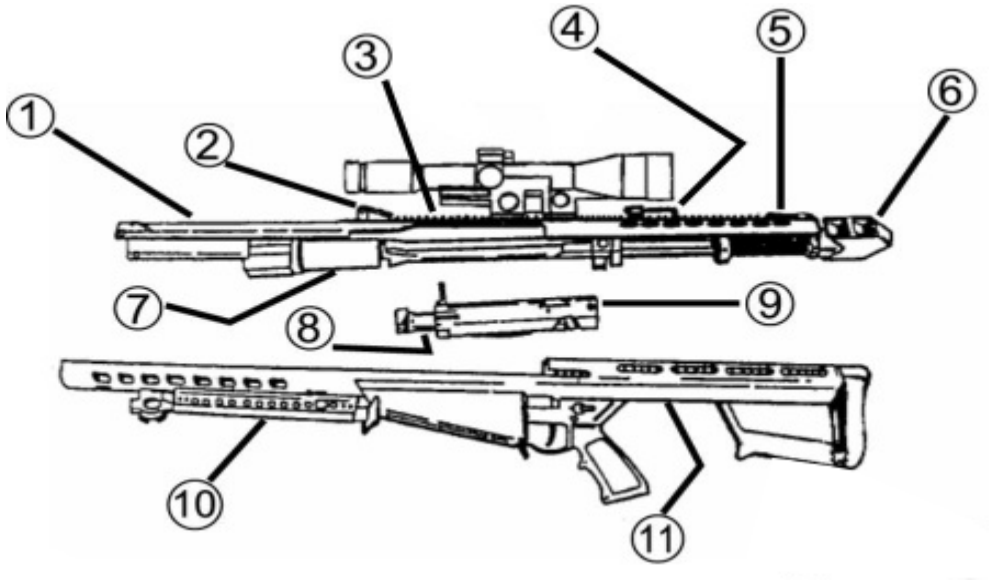


Figure 1-2. M82A1 Scoped Rifle – Major Components

(1) **Upper Receiver, Complete.** Sheet metal cover (1) combining and including the front and rear sights (2) and (5), telescope base (3), carrying handle (4), muzzle brake (6) and barrel (7).

(2) **Rear Sight Leaf.** Peep style aperture with elevation markings for 100 to 1500 meters.

(3) **Scope Base.**

(4) **Carrying Handle.** Steel stock with a hard plastic handle.

(5) **Front Sight.** Post with a protective, anti-glare ring.

(6) **Muzzle Brake.** Critical to the functioning of the rifle; absorbs approximately 70% of the recoil.

(7) **Barrel.** Length is 29 in (74 cm) with eight lands and grooves in a uniform right-hand twist, one turn in 15 in (38cm). Muzzle end is threaded to accept a muzzle brake; breech end has a barrel extension integral to the locking function.

(8) **Bolt.** Houses the firing pin, extractor, and ejector.

(9) **Bolt Carrier, Complete.** Consists of the bolt (8), firing pin, all extraction and ejection mechanisms, cocking lever, and sear.

(10) **Bipod Assembly, Complete.** Forward support system comprised of retractable bipod legs and extending spike feet. Bipod assembly is quick-detachable from the receiver.

(11) **Lower Receiver, Complete.** Sheet metal cover combining and including the bipod assembly (10), buffer, midlock pin, and trigger mechanism.

1.2.3 ASSOCIATED EQUIPMENT. The M82A1 Rifle (Figure 1-3) is comprised of M82A1 Rifle (1), Magazine (2), Airtight, Watertight case (3), and Cleaning Kit (4). Telescopic sights, shooting mats, and spare magazines are optional accessories.

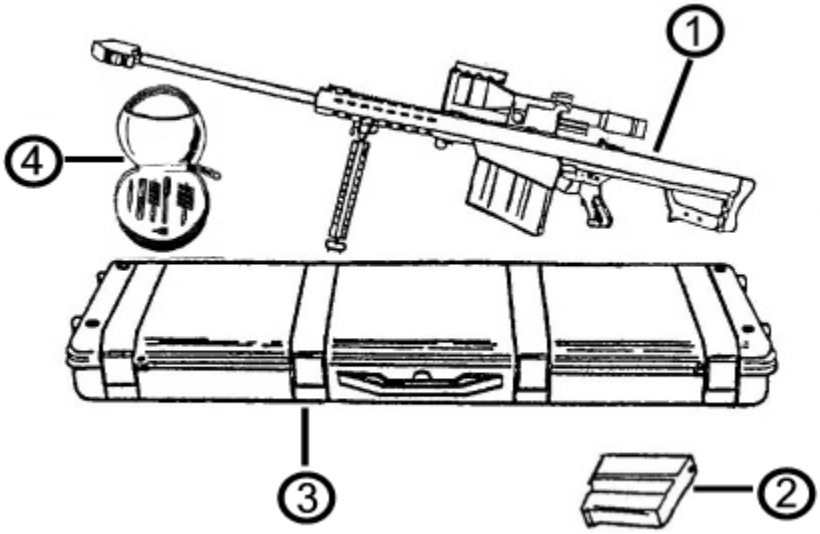


Figure 1-3. The M82A1 Rifle System

1.3 PRINCIPLES OF OPERATION

1.3.1 GENERAL FUNCTIONING. The cycle of operation for the M82A1 Rifle is broken down into eight basic steps (more than one step may occur at the same time). For reference, see Figure 1-4 and the accompanying legend.

(1) Barrel Key
(2) Impact Bumper
(3) Bolt
(4) Bolt Latch
(5) Firing Pin
(6) Firing Pin Extension
(7) Bolt Spring
(8) Extension Stop Pin
(9) Accelerator
(10) Cocking Lever
(11) Sear Spring
(12) Sear
(13) Barrel Spring
(14) Mid-Lock Pin
(15) Cam Pin
(16) Front Magazine Hinge
(17) Magazine Catch
(18) Disconnector
(19) Trigger
(20) Buffer
(21) Safety
(22) Transfer Bar

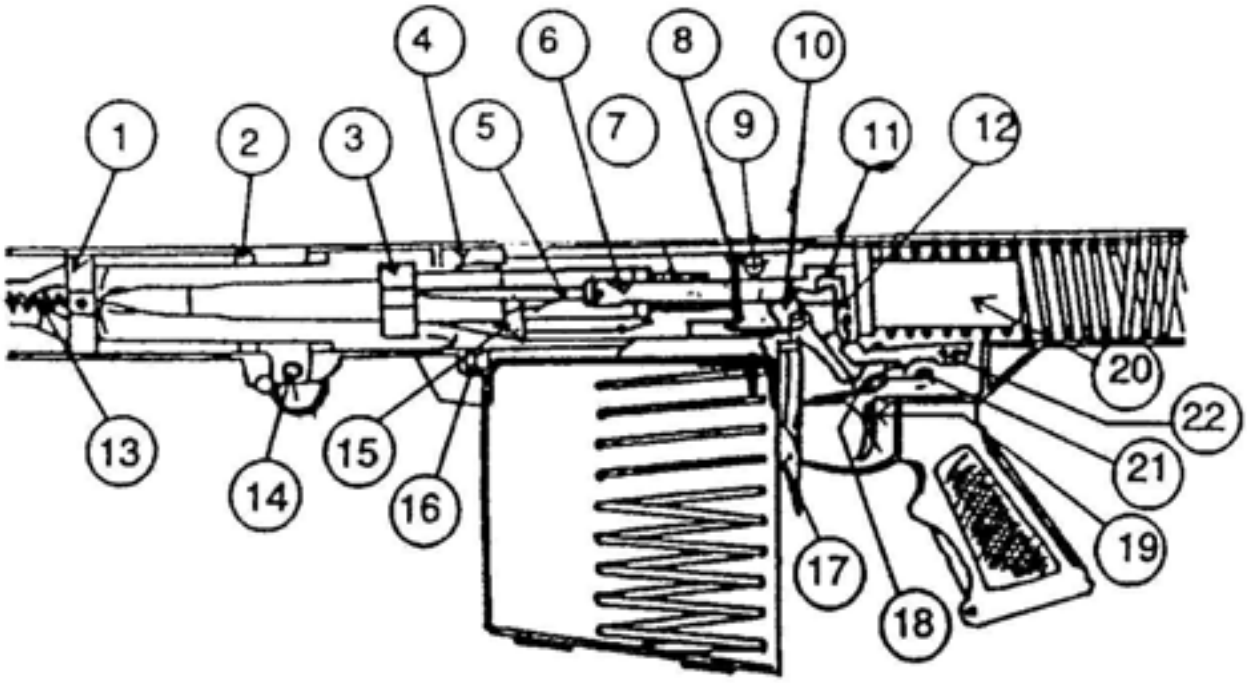


Figure 1-4. Identification of Operating Parts

1.3.2 FEEDING. The force of the mainspring pushes the bolt (1), Figure 1-5, forward, toward the barrel extension (2), stripping a cartridge from the magazine and loading it into the chamber. The bolt carrier is moved to the rear by hand when first loading but the bolt carrier handle should be released fully to allow the bolt to come forward freely under spring pressure. The rifle will fire in the semiautomatic mode on subsequent firings.

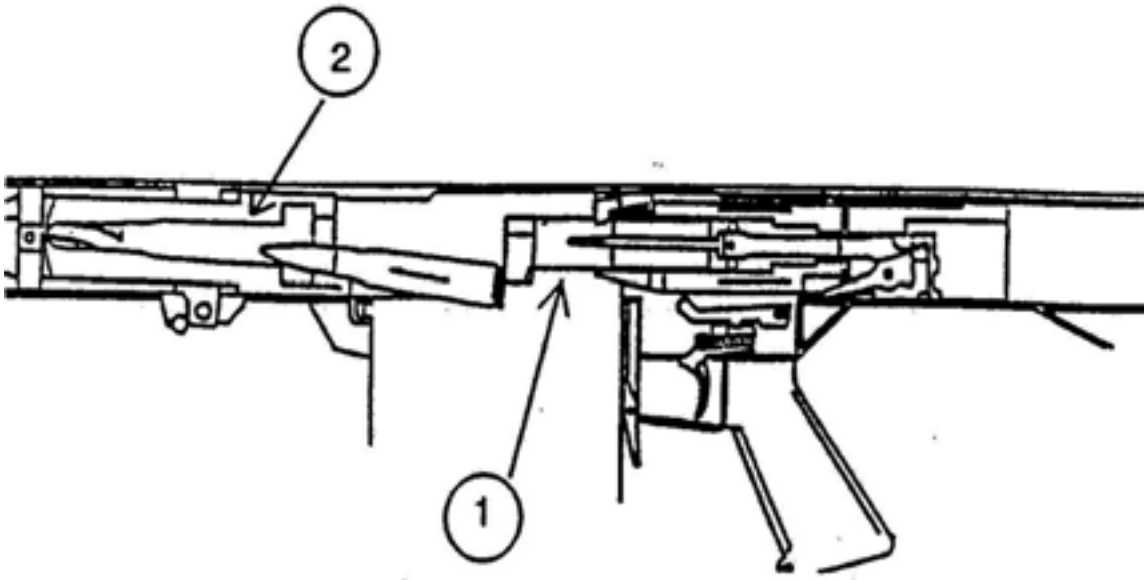


Figure 1-5. Feeding Procedure

1.3.3 CHAMBERING. The bolt forces the round fully into the firing chamber (1), Figure 1-6, and the extractor snaps over the case rim. Blockages such as dirt or other debris can prevent full chambering, as can dirty, bent, dented, or otherwise faulty ammunition.

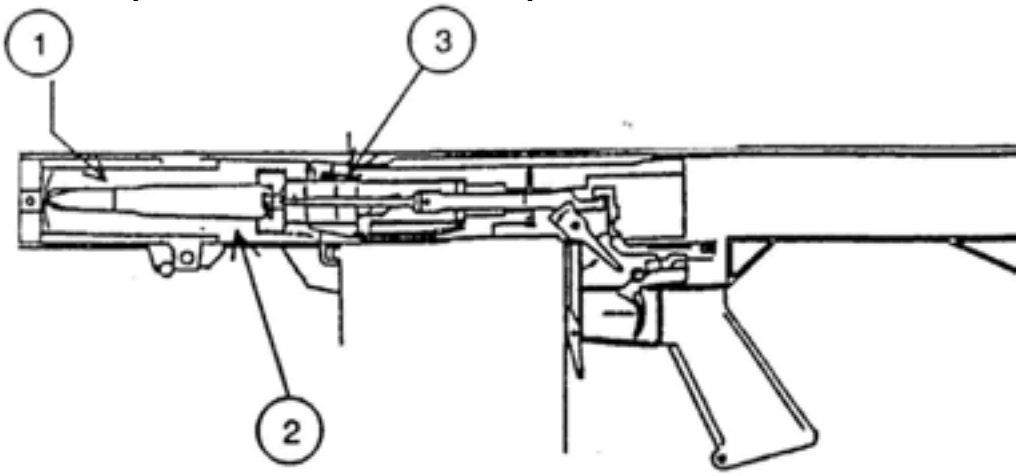


Figure 1-6. Chambering/Locking Procedure

1.3.4 LOCKING. During chambering, the bolt enters the barrel extension (2), Figure 1-6, and the bolt latch (3) engages the bolt latch trip (inside-top of the upper receiver, just behind barrel extension). The bolt latch is depressed, allowing the bolt to retract into the bolt carrier. The bolt rotates due to the cam slot and is locked when its three locking lugs rotate into place in the barrel extension, closing the firing chamber.

1.3.5 FIRING. The trigger (1), Figure 1-7, pivots on the trigger housing pin and presses on the transfer bar (2), causing the bar to rise. The transfer bar engages the sear (3) (housed in the bolt carrier), forcing it upward and out of engagement with the firing pin extension (4). The firing pin extension, under spring power, forces the firing pin (5) forward to strike the primer of the cartridge.

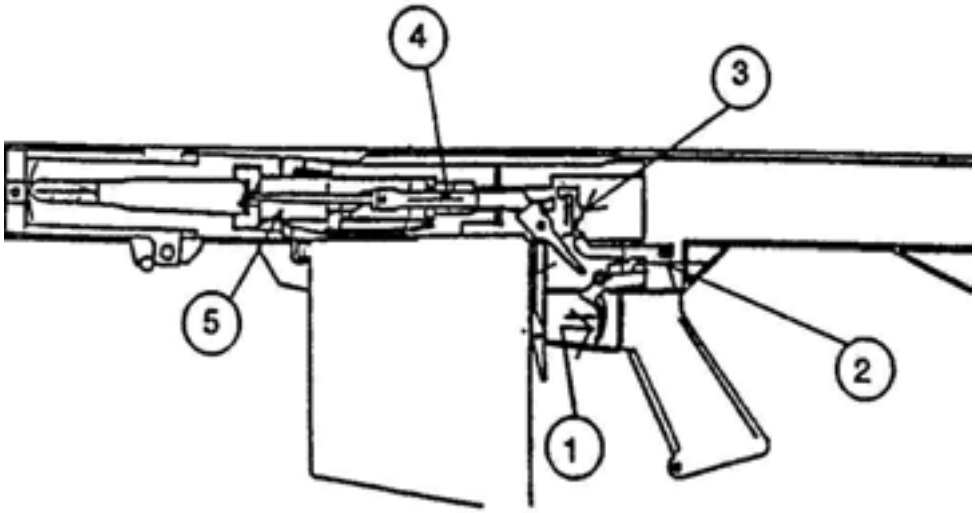


Figure 1-7. Firing Procedures

1.3.6 UNLOCKING. When the cartridge is fired, gas pressure exerts a thrust on the bolt face via the case head. The bolt carrier (1), Figure 1-8, carries the bolt (2) and barrel extension (3) to the rear until the accelerator (1), Figure 1-9, protruding beneath the bolt carrier (2), contacts a shoulder in the trigger housing area. The accelerator is then pivoted up, causing the accelerator rod (3) to be pushed out of the bolt carrier. As it protrudes from the front of the bolt carrier, it separates the bolt from the barrel extension. Because of the cam slot in the side of the bolt, the bolt rotates as it travels rearward and unlocks from the barrel extension.

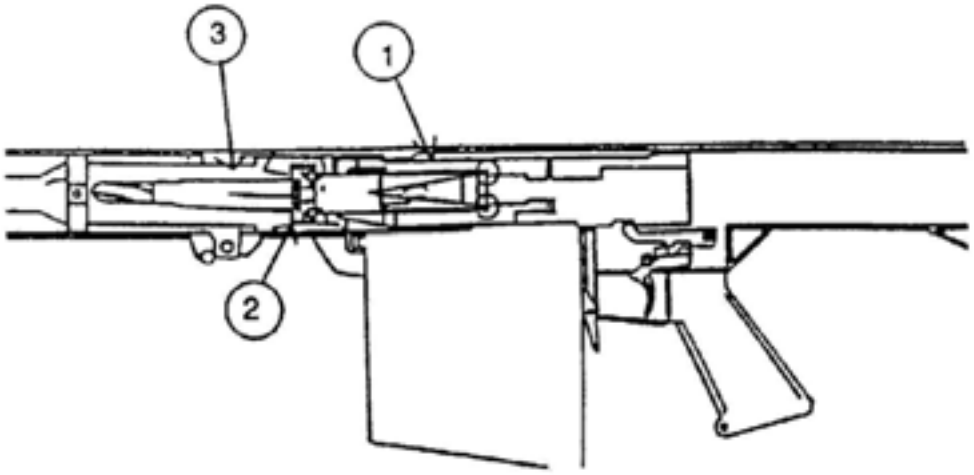


Figure 1-8. Unlocking Procedures

1.3.7 COCKING. As the bolt carrier recoils to the rear, the cocking lever (4), Figure 1-9, rides the transfer bar (5) back and down, causing it to disconnect from the trigger. The transfer bar is held down in the position by the disconnector and not released until pressure is released from the trigger. After disconnection, the cocking lever swings on its pin and overrides the transfer bar. The other end of the cocking lever protrudes into the bolt carrier and into the firing pin extension. As the cocking lever pivots, it withdraws the firing pin and compresses the firing pin extension spring. The firing pin extension now catches the sear.

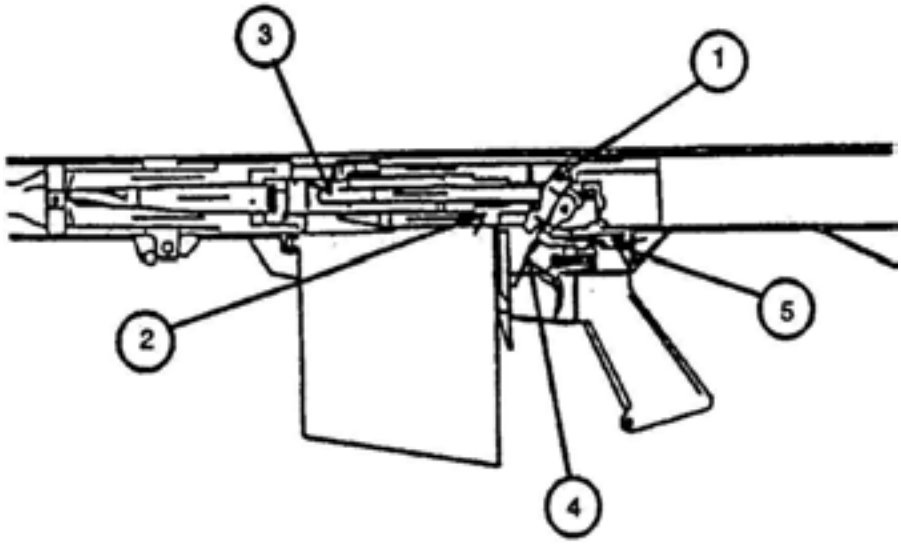


Figure 1-9. Cocking Procedures

1.3.8 EXTRACTION. As the bolt locking lugs rotate away from the barrel extension, the bolt withdraws from the barrel and the bolt latch (1), Figure 1-10, locks the bolt in its extended position. The extractor (1), Figure 1-11, located on the bolt face (2) and hooked over the rim of the fired case, pulls the case from the firing chamber.

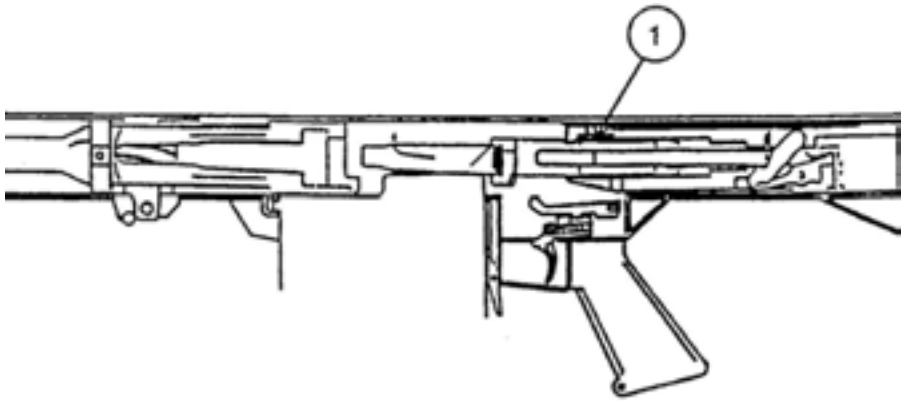


Figure 1-10. Extraction Procedures

1.3.9 EJECTION. As soon as the fired case has been extracted and has cleared the rear of the barrel extension, it is expelled from the rifle by the spring-powered ejector (3).

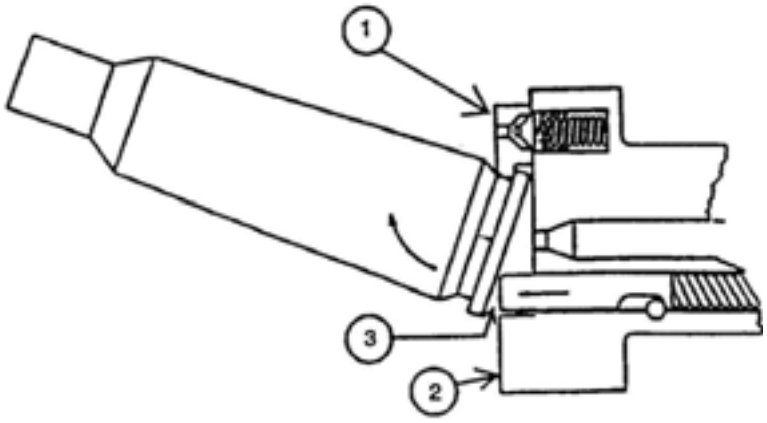


Figure 1-11. Ejection Procedures

1.3.10 SAFETY MECHANISM. There is a single thumb-lever (1), Figure 1-12, which prohibits the rifle from firing by blocking the trigger from rotating up, effectively preventing it from rotating the transfer bar on to the sear.

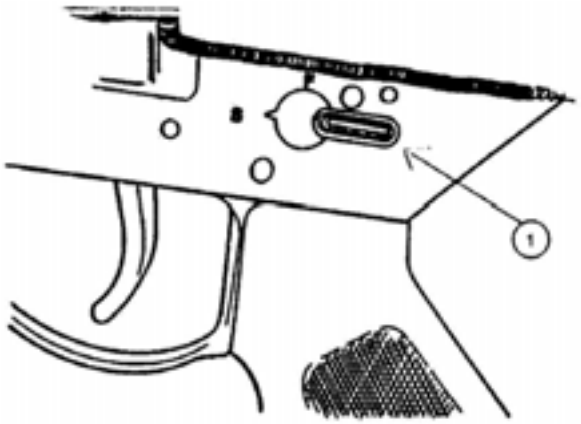


Figure 1-12. Thumb Safety Lever

CHAPTER 2
MAINTENANCE OF THE RIFLE

2.1 INITIAL INSPECTION AND ASSEMBLY

2.1.1 INSPECTION - OF RIFLE'S MAJOR GROUPS.

The rifle's four major groups are packaged as shown in Figure 2-1.

1. Upper Receiver
2. Bolt Carrier Group
3. Lower Receiver
4. Bipod Assembly

Ensure all components are present (see paragraph 1-7, page 1-4) and inspect for obvious damage, reporting any discrepancies to the Barrett factory. Detailed inspection should be conducted as follows:

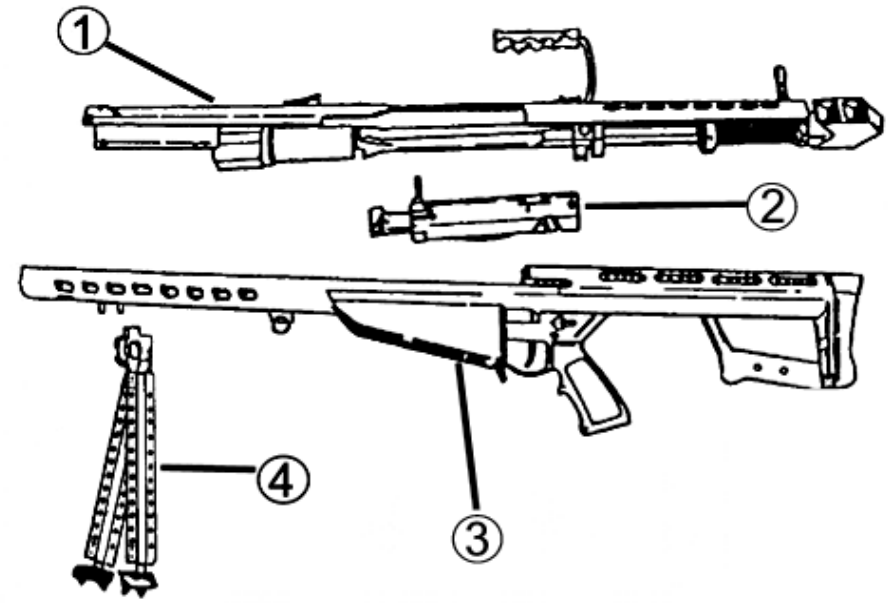


Figure 2-1. Four Main Groups

2.1.1.1 INSPECTION - THE UPPER RECEIVER

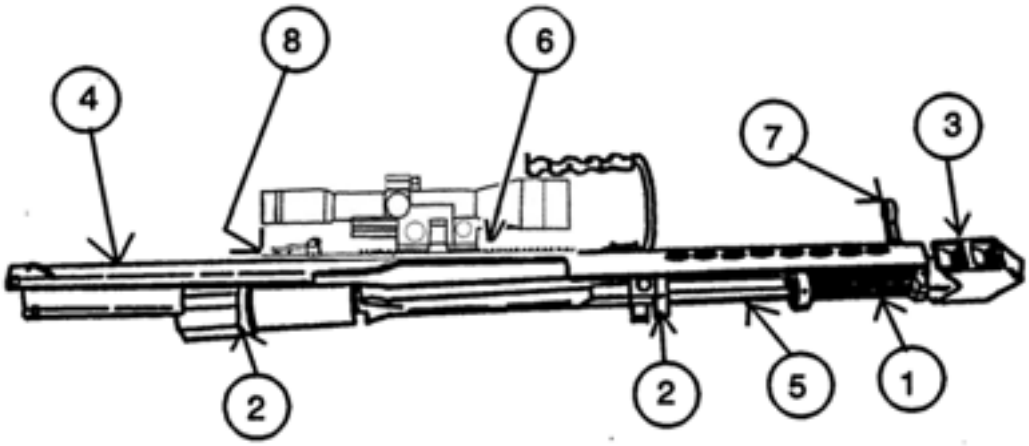


Figure 2-2. Upper Receiver

(1) Barrel springs (1), must not be overstretched, and each coil should be tight, with no spaces between coils.

(2) Impact bumpers (2) should be in good condition (not frayed, cracked, or twisted).

(3) The muzzle brake (3) should be tight and fully screwed on (see 3.3.4, page 28 for installation procedures).

(4) The upper receiver (4) should not be cracked, bent, or burred. Pay special attention to the hinge lip at the front of the receiver to ensure that it is not cracked, bent, or deformed in any way.

(5) The barrel (5) should be clean and free of obstruction.

(6) All scope mountings (6) should be tight, in good condition, and free of oil (iron sights, front (7) and rear (8), may be lightly oiled at pivot points to prevent corrosion).

2.1.1.2 INSPECTION - THE BOLT CARRIER GROUP

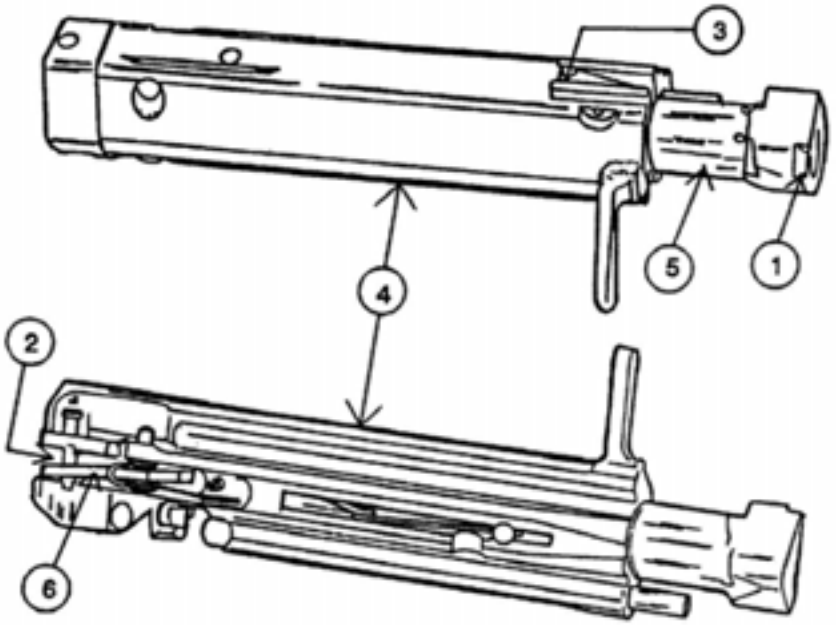


Figure 2-3. Bolt Carrier Group

(1) Ejector and extractor (1) must be checked to ensure they are under spring tension, and neither chipped nor worn.

(2) With firing mechanism decocked (use rear lock pin to depress sear (2), depress the bolt latch and manually work the bolt in and out, feeling for any roughness, which may indicate wear, corrosion, or dirt/grit in the carrier (4).

(3) Push the bolt (5) into the carrier and inspect for firing-pin protrusion. Check firing-pin hole (on bolt face) to ensure it is not eroded or elongated. Bolt face should not be pitted.

(4) Inspect bolt latch (3): should not show any deformation.

(5) Swing the cocking lever (6) forward. The sear should capture the firing-pin extension before the cocking lever is fully depressed.

2.1.1.3 INSPECTION - LOWER RECEIVER

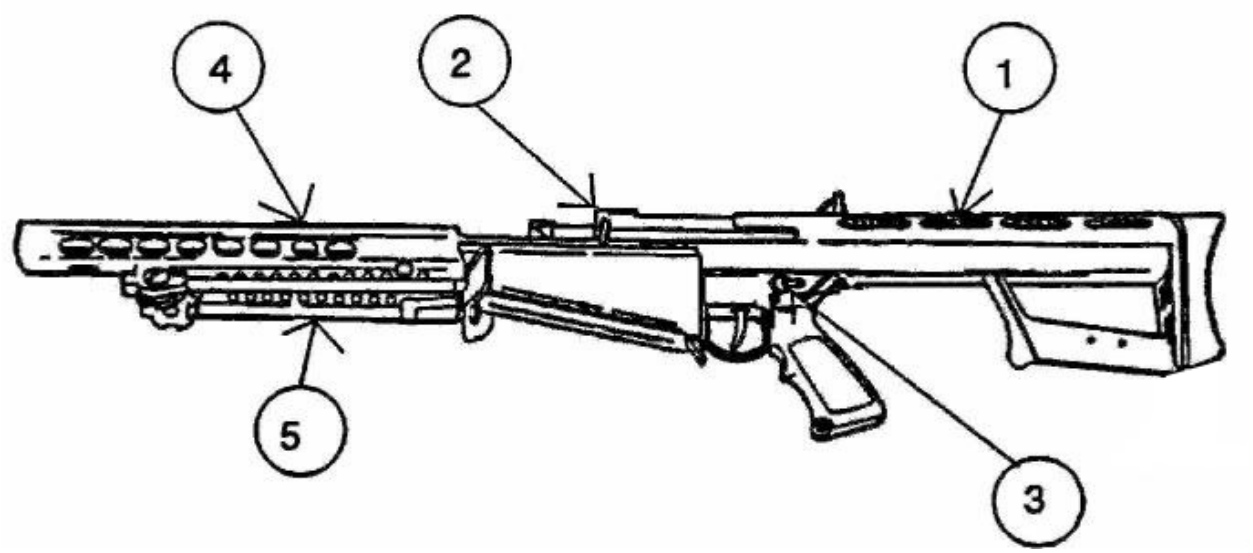


Figure 2-4. Lower Receiver

(1) With bolt carrier in place, pull it rearward and check to see that the mainspring (1) moves freely (full travel) and is not deformed.

(2) Hold bolt carrier back and down approximately ¼ in (6 mm) under mainspring housing (2) (sheet metal closure). With the thumb safety (3) on fire, pull the trigger. Firing mechanism should function (a slight rise in bolt carrier is normal). If the housing is bent, the bolt carrier will rise excessively as the trigger is pulled, preventing proper functioning.

(3) Lower receiver (4) should not be cracked, bent, or burred.

(4) Check bipod assembly (5) and mounting hardware to see that legs extend and hardware functions properly.

2.1.2 ASSEMBLY OF MAJOR GROUPS.

1. Grasp the Lower Receiver Group and extend the bipod legs by pulling the legs down to the front, where they will lock into place. See Figure 2-5. (To retract, pull down on leg (1) and swing back into position along the receiver. If firing without using the bipod, fold them forward to preclude interference with the charging handle.) Pulling on the feet of the bipod (2) causes the legs to extend—to retract a leg, depress the plunger (3) located on the bipod leg and push on the foot (2). Place receiver on level surface.

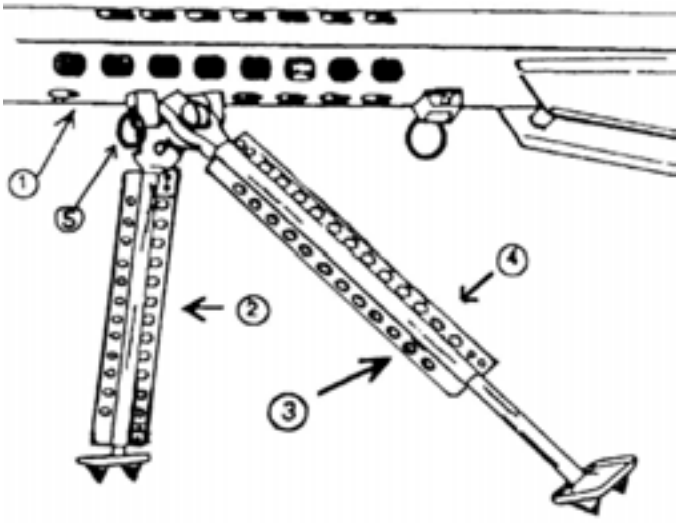


Figure 2-5. Extending Bipod Legs

2. The Bolt Carrier Group (1), Figure 2-6, is held in place, under tension, in the lower receiver (2) by the midlock pin (3), which extends through a locking hole in the receiver's sheet metal. (Both the midlock pin and the rear lock pin, located in a retaining hole in the end of the buttstock, have finger rings to aid in removal.)

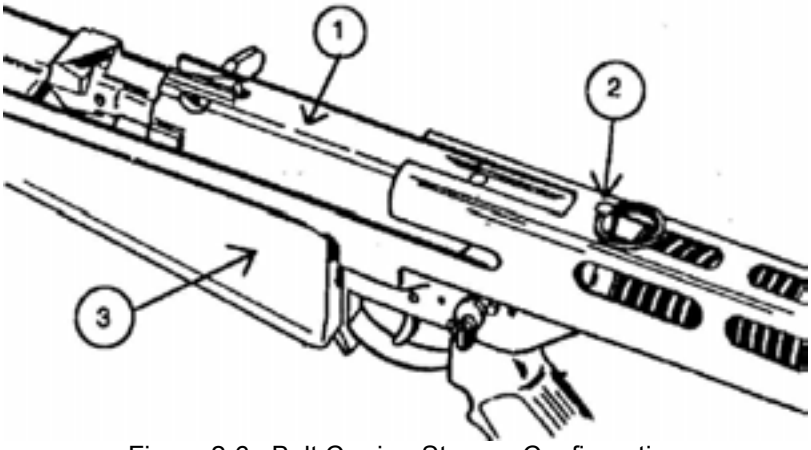


Figure 2-6. Bolt Carrier, Storage Configuration

3. Standing above and to the rear of the lower receiver, grasp the charging handle (1), Figure 2-7, with the right hand, and carefully pull back, against tension, while withdrawing the midlock pin (2) from its retaining hole. Allow the bolt carrier (3) to come forward SLOWLY until there is no more spring tension and it rests in the lower receiver.

Figure 2-7. Releasing Bolt Carrier From Storage Configuration

4. Carefully pick up the upper receiver. The barrel will be nested inside it for compact storage. Move the impact bumper rings into position on either side of the receiver's central barrel bushing, so that they rest snugly against the bushing. Align the barrel so that its feed-ramp (slanted entry to firing chamber) is to the bottom. Keeping fingers away from the barrel, hold the upper receiver horizontally, then tilt in the direction of the muzzle. The barrel should fall into place, at its full forward extension in the receiver.

WARNING

THE TENSION ON THE BARREL SPRINGS IS ABOUT 70 lbs (32 kg) SERIOUS INJURY COULD RESULT IF SPRINGS ARE SUDDENLY RELEASED.

5. The barrel springs (1), Figure 2-8, at the front of the upper receiver, are held together by a spring yoke—the barrel key (2). Maintaining the downward tilt of the upper receiver (to keep the barrel (3) in place) firmly grasp the barrel key—not the springs—and pull it into place on the forward slot of the barrel. Work the key from side to side until it is firmly seated in the barrel slot. The upper receiver is now fully assembled.

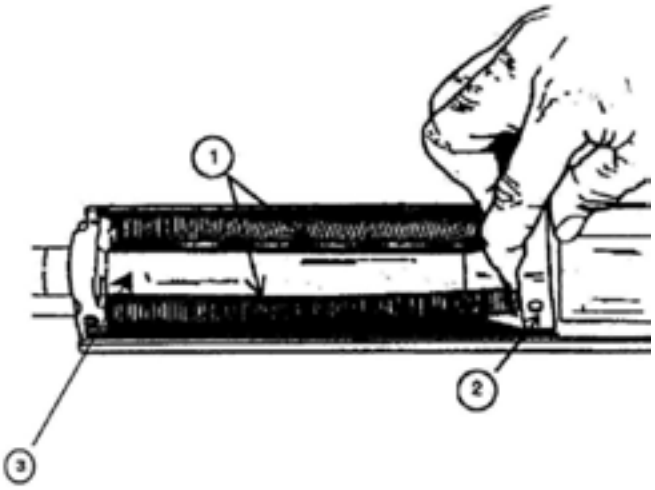


Figure 2-8. Positioning Barrel Key

6. Making sure the bipod legs are extended high enough to allow sufficient ground clearance, position the upper receiver (1), Figure 2-9, rear up, muzzle down, over the lower receiver (2).

CAUTION

BE SURE THE HOOK AND BAR ARE PROPERLY MATED, OR THE RIFLE CAN BE DAMAGED BY FINAL ASSEMBLY MOTION.

7. Engage the front hook (3), Figure 2-9, of the upper receiver over the hinge bar (4) of the lower receiver. Positioned directly behind the rifle, again grasp the bolt charging handle (1), Figure 2-10, and withdraw bolt against mainspring tension so the bolt will clear the barrel (2) when the upper receiver (3) is lowered.

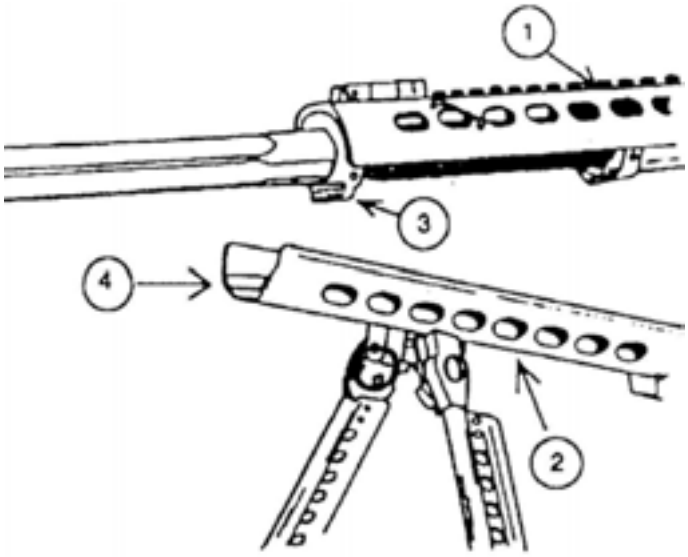


Figure 2-9. Joining Upper and Lower Receivers

8. Lower and close the upper receiver (3), Figure 2-10, onto the lower receiver (4). Release the charging handle (1) slowly until bolt engages barrel (2).

WARNING

THE RIFLE MUST NOT BE FIRED WITHOUT BOTH THE MIDLOCK AND REAR LOCK PINS FIRMLY IN PLACE. SERIOUS INJURY OR DEATH COULD RESULT.

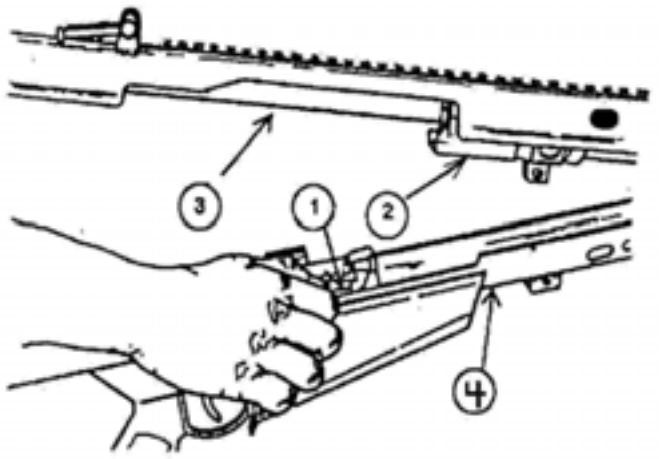


Figure 2-10. Lowering Upper Receiver

9. Place the midlock pin (1), Figure 2-11, through the hole near center bottom of the rifle, until it snaps fully in to lock the upper (2) and lower (3) receivers together. Insert the rear lock pin (4) from right to left through the rear (buttstock) hole to complete mating of the receivers.

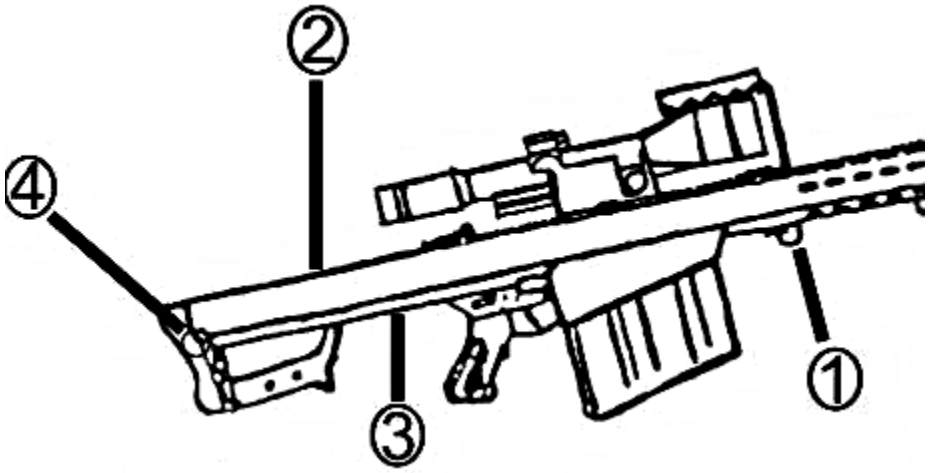


Figure 2-11. Proper Placement of Rear and Midlock Pins

2.2 LOADING

1. Using appropriate ammunition, load the magazine in the normal manner. Ensure that cartridges are pushed all the way to the rear of the magazine. Load no more than 10 rounds.

2. Prior to inserting the magazine, grasp the charging handle and dry-cycle the rifle several times (work the bolt all the way back and forth). This will serve two purposes. First, if there has been any damage to the sheet metal housing during shipping, the bolt carrier will not move freely. Second, the shooter will be able to determine if the bolt fully closes and rotates to a locked position.

3. Insert the magazine into the magazine well in the lower receiver, with magazine (1), Figure 2-12, tilted (bullet tips upward). Insert the front of the magazine hook (2) to its hinge, located in the front of the magazine well (3). Then swing the rear of the magazine up until it locks into place by means of the rear catch (4). It should lock in with an audible click. Be aware that it is possible to insert the hook on the front of the magazine in the wrong space. Pull sharply on the magazine to ensure it is properly seated.

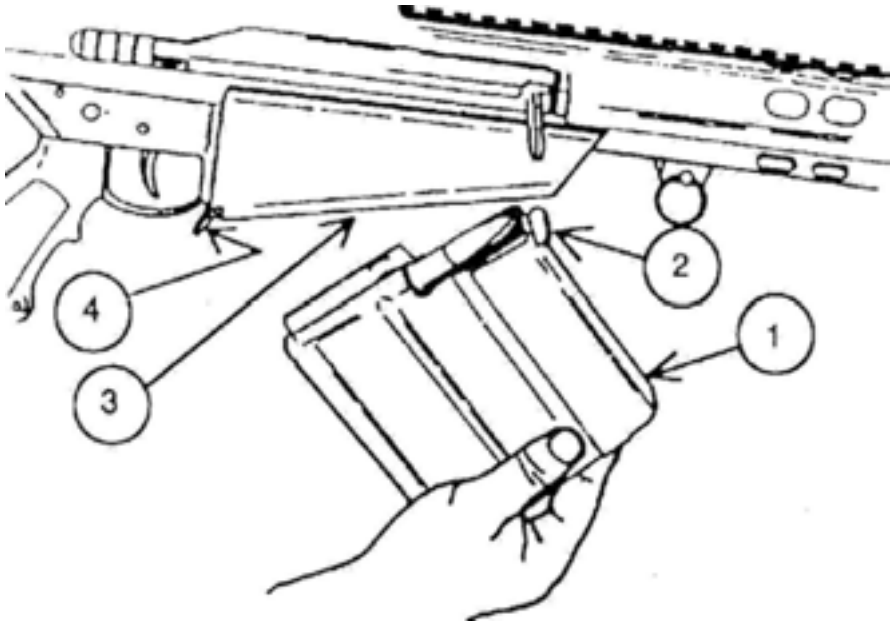


Figure 2-12. Inserting Magazine

WARNING

NEVER TRY TO FORCE A CARTRIDGE TO CHAMBER. IF THE BOLT DOES NOT FULLY CLOSE, REMOVE THE MAGAZINE, CLEAR THE RIFLE, AND CHECK FOR OBSTRUCTIONS, BUT DO NOT ATTTEMPT TO FIRE. SERIOUS INJURY COULD RESULT.

4. With the safety in the safe position (safety lever horizontal (1), Figure 2-13) and the muzzle pointed in safe direction pull the charging handle to the rear until it stops, then release it (do not keep your hand on the changer handle). The rifle then loads and locks under its own spring power for all subsequent rounds.

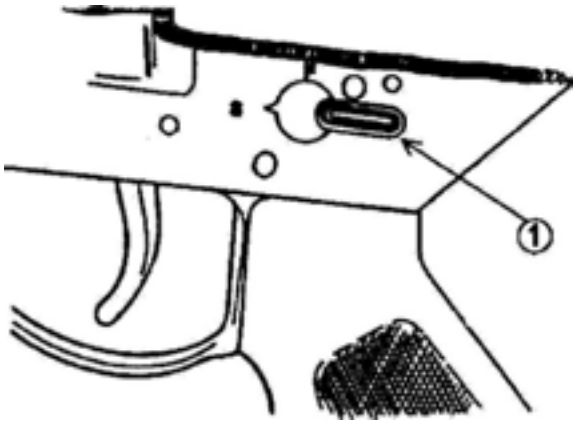


Figure 2-13. Rifle Safety on Safe

5. Because the rifle is recoil-operated, the shooter must be positioned squarely behind the rifle, with the recoil pad firmly against the shoulder. Anything less may result in injury discomfort, or failure of the action to cycle correctly.

WARNING

DOUBLE HEARING PROTECTION SHOULD BE WORN WHEN FIRING SINCE HARMFUL LEVELS OF NOISE ARE GENERATED.

6. The rifle may now be fired (safety off—lever vertical (1), Figure 2-14). The rifle will fire one round for each squeeze of the trigger, until the magazine and chamber are empty.

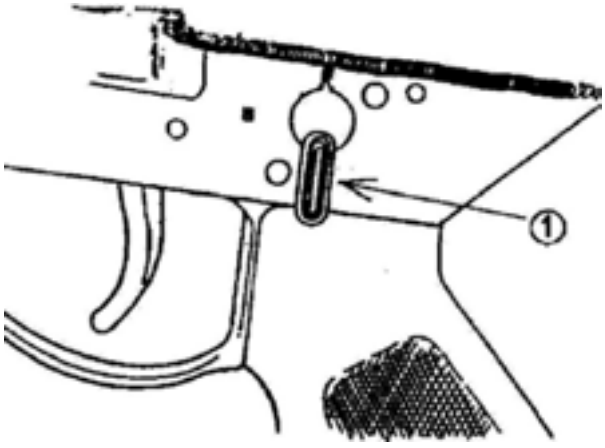


Figure 2-14. Rifle Safety on Fire

WARNING

THE BOLT DOES NOT AUTOMATICALLY REMAIN TO THE REAR WHEN THE RIFLE OR MAGAZINE IS EMPTY WHICH CAN CAUSE INJURY OR DEATH FROM AN ACCIDENTAL DISCHARGE.

7. After the rifle is unloaded, and with the charging handle in the rear, always physically check the chamber for ammunition.

2.3 UNLOADING RIFLE AND MAGAZINE

2.3.1 UNLOADING RIFLE. Place the rifle on safe (safety lever horizontal (1), Figure 2-13), press the magazine catch forward, towards the magazine, and remove the magazine. Pull the charging handle to the rear, which will eject any cartridge still chambered. (One method of indicating the rifle has been cleared is to take an empty cartridge case, insert it halfway into the ejection port so that the neck is visible, and ease the bolt forward onto it.)

CAUTION

DO NOT LEAVE ROUNDS IN THE MAGAZINE FOR EXTENDED PERIODS OF TIME SINCE THIS WILL CAUSE THE SPRING TO LOSE TENSION AND MAY CAUSE A MALFUNCTION.

2.3.2 UNLOADING THE MAGAZINE. Hold the magazine in either the right or left hand, cartridges facing away from you, and, using the thumb of the other hand, push the cartridges out one after another, until all are ejected.

2.4 PREVENTIVE MAINTENANCE PROCEDURES

2.4.1 GENERAL MAINTENANCE.

1. Ensure that all bearing surfaces and exposed parts, particularly those listed below, are clean and properly lubricated:

   Front and rear barrel bushings
   Bolt and bolt carrier
   Mainspring housing
   Trigger assembly
   Transfer bar assembly

2. Inspect all parts for looseness and tighten or replace, as necessary.

   a. Inspect all parts (especially along welds) for cracks or damage and replace, if necessary.

   b. Each time the rifle is assembled for firing ensure that the barrel, chamber, and locking lugs of the bolt are free of excess oil. When possible, an operational check using ten dummy rounds should be performed. Insert the dummy rounds into a magazine and load the magazine into the rifle. Manually operate the bolt carrier to the rear and forward, making sure the cartridges feed, extract, and eject properly. If the rifle is not functioning correctly, refer to the Section on Troubleshooting.

   c. Refer to Table 2-3 for Malfunction and Immediate Action Troubleshooting.

2.4.2 SPECIFIC MAINTENANCE.

1. Before Firing:

   a. Thoroughly clean and dry the bore and chamber (to be accomplished by inserting the cleaning rod into the rear (chamber) end of the barrel to avoid damaging the crown).

CAUTION

WHENEVER IT IS NECESSARY TO INSERT CLEANING RODS OR OTHER DEVICES THROUGH THE MUZZLE END OF THE BARREL, BE ESPECIALLY CAREFUL NOT TO DAMAGE THE MUZZLE CROWN, SINCE IT COULD AFFECT THE ACCURACY OF THE RIFLE.

   b. After reassembly, check to ensure the rear and midlock pins are securely in place.

   c. Inspect to be sure the magazine is securely in place and hinged properly in the front.

2.5 GENERAL CLEANING INSTRUCTIONS

(1) The rifle should be cleaned and lubricated as soon as possible after each shooting session, to prevent the corrosive effects of moisture, and buildup of debris in the action and barrel.

CAUTION

BEFORE ANY CLEANING ACTIVITY, MAKE SURE THE RIFLE IS NOT LOADED.

CAUTION

USE CAUTION WHEN INSERTING CLEANING RODS OR OTHER DEVICES THROUGH THE MUZZLE END OF THE BARREL AS THE MUZZLE CROWN COULD BE DAMAGED, AFFECTING THE ACCURACY OF THE RIFLE.

(2) Attach the chamber cleaning brush to the cleaning rod. Apply cleaning solvent to the brush and vigorously scrub the chamber. Turn the rod and brush in a clockwise direction in order to remove residue from the corner of the chamber neck.

CAUTION

ALWAYS CLEAN THE BARREL BY PULLING OR PUSHING THE CLEANING DEVICE FROM THE CHAMBER END TO THE MUZZLE END SO AS TO DRAW THE DIRT AND MOISTURE AWAY FROM THE RIFLE ACTION.

(3) Using the cleaning rod with jag eye and two patches dipped in cleaning solvent, swab the barrel to remove powder residue. Repeat with clean patches until they come out clean.

CAUTION

DO NOT ALLOW BORE CLEANER OR ANY OTHER SOLVENT TO COME INTO CONTACT WITH THE BARREL BUMPERS AS IT MAY CAUSE THE PLASTIC COMPOSITE MATERIAL TO DETERIORATE.

(4) Clean the muzzle brake with a small brush and bore solvent. It is best to clean the muzzle brake at the same time the barrel is being cleaned as the bore solvent will help in loosening the carbon that builds-up on the interior walls.

(5) After each 50 rounds it is recommended that the bore and chamber be scrubbed with a copper solvent to remove deposits in the barrel. This will maintain accuracy and insure proper functioning of the rifle.

(6) Clean the bolt face with bore solvent. Use a brass bristle brush to remove carbon and brass shaving from both the extractor and the ejector. Depress the ejector and extractor by hand to test their smooth motion. If they hang-up or their motion is not smooth, remove them and clean the parts,

springs, and holes. Apply lubrication before assembly and test their motion by hand.

(7) Clean the remainder of the rifle with cotton-tipped swabs, general purpose brushes and rags. If the rifle is to be stored, make sure all metal surfaces have a light coating of preservative oil.

2.5.1 AFTER FIRING CLEANING INSTRUCTIONS

(1) Clean barrel from the rear. Repeat this cleaning for three consecutive days, or until there is no longer any evidence of fouling in the bore. Clean the outside and end of the muzzle brake, removing all carbon deposits.

(2) After the fourth cleaning following firing, and if no additional firing is anticipated within the next 24 hours, use clean, dry swabs to thoroughly dry bore and chamber. Then, using clean swabs which have been dipped in Break Free and the excess wrung out, apply a light film to the bore and chamber.

(3) Remove the bolt from the bolt carrier and thoroughly clean the interior and exterior of both. Remove all brass fouling and powder residue from the face of the bolt, being especially alert to fouling in the interior of the bolt and the firing pin hole.

(4) Thoroughly dry all other components and apply a light coating of Break Free or another approved lubricant immediately.

2.5.2 RIFLE CLEANING SCHEDULE

(1) Daily Service. As part of daily service, inspect the bore and chamber, and clean component parts of firing mechanism. Wipe entire rifle thoroughly, dry, and re-lubricate.

(2) Two-Week Intervals. For periods up to two weeks, if the rifle is not being fired, renew the oil film in the bore and chamber as required by climatic conditions of the area.

(3) 90 Day Intervals. For periods up to 90 days, if the rifle is not to be fired, it may be coated with Break Free.

2.6 TROUBLESHOOTING

Table 2-2. MALFUNCTIONS AND IMMEDIATE ACTION

MALFUNCTION	CAUSE	CORRECTIVE ACTION
Failure to Feed	Sluggish action	Clean and lubricate or (if cold) check overlubrication
	Short-cycling	Support receiver more firmly in shoulder
	Magazine not seated	Reinsert properly
	Bolt carrier binding in the receiver	Straighten receiver as required
	Weak barrel springs	Replace
Failure to Chamber	Damaged cartridge	Remove and recharge/ Reload
	Dirty chamber	Clear and clean
	Faulty mainspring or bent receiver housing	Replace spring or rebend housing
Failure to Lock or Unlock	Obstruction between firing pin & bolt	Disassemble and clean
	Blown primer wedged between firing-pin and bolt	Return to Barrett factory if problem persists
	Excessive dirt, sand, etc., in locking area	Clean chamber
	Broken or burred bolt latch or bolt latch spring	Repair or replace – if bolt latch slot on bolt is rounded over
	Bolt spring bent or not seated properly	Replace or reinstall
Failure to Fire	Faulty ammunition	Replace ammunition
	Bolt carrier not in battery	Manually cycle fresh round
	Excessive lift in bolt carrier when trigger is squeezed	Bend main spring lips down
	Improper installation of firing mechanism	Assembly properly
	Trigger components Incorrectly installed or faulty/broken	Reinstall, or repair/replace
Failure to Extract	Broken extractor	Replace
	Extractor not moving freely in slot	Remove and clean
	Dirty chamber	Clean
Failure to Eject	Frozen or damaged ejector or spring	Remove and replace
Very Hard Recoil	Faulty/hot ammo	Replace or cool ammunition
	Muzzle brake missing/damaged/clogged	Inspect and replace if needed
	Damage to main spring and/or buffer, etc.	Remove and replace

2.7 COMPONENT REPLACEMENT INTERVAL

After approximately 4,000 rounds have been fired through the M82A1, the rifle should be detail inspected by a qualified armorer. In particular, check the following components for excessive wear/deformity (automatic replacement at 4,000 rounds is not recommended):

- Barrel
- Muzzle brake
- Bolt locking lugs
- Firing pin
- Sear and sear spring
- Trigger spring
- Barrel springs
- Front and rear barrel bumpers
- Bolt spring
- Firing pin hole
- Cocking lever spring

CHAPTER 3
DISASSEMBLY / ASSEMBLY PROCEDURES

3.1 DISASSEMBLY / ASSEMBLY OF MAJOR PARTS OF RIFLE

(1) If the rifle is not already broken down into its main parts, begin by ensuring that the chamber is cleared.

(2) Place the rifle on the safe (safety lever horizontal), see Figure 2-13, page 19, press the magazine catch forward, towards the magazine, and remove the magazine. Pull the charging handle to the rear, which will eject any cartridge still chambered.

(3) After the rifle is unloaded, and with the charging handle to he rear, always physically check the chamber for ammunition to preclude injury from an accidental discharge.

(4) Remove the rear lock pin, (see Figure 2-11, page 17), from the rear (buttstock) hole. Remove the midlock pin from the hole near center bottom of the rifle. Positioned behind the rifle, retract the charging handle on the bolt carrier until the bolt withdraws from, and clears, the barrel. Lift the upper receiver at the rear, far enough to clear the bolt, then slowly release the charging handle. Continue lifting the upper receiver until it can be unhinged from the lower receiver.

(5) Remove the bolt carrier from the lower receiver by sliding it forward until it is free of the sheet metal closure (1), Figure 2-15, and can be lifted out of the lower receiver.

CAUTION

WHEN REMOVING THE BOLT CARRIER FROM THE LOWER RECEIVER, ENSURE THAT THE BOLT CARRIER IS COMPLETELY FORWARD OF THE SHEET METAL CLOSURE BEFORE LIFTING TO AVOID SERIOUS DAMAGE TO THE LOWER RECEIVER.

Figure 2-15. Removing Bolt Carrier From Storage Configuration

3.2 MUZZLE BRAKE REMOVAL.

(1) Using a T-30 Torx wrench, remove two muzzle brake screws. Take care not to lose muzzle brake washers. Use a small screwdriver or pick from cleaning kit to remove muzzle brake washers.

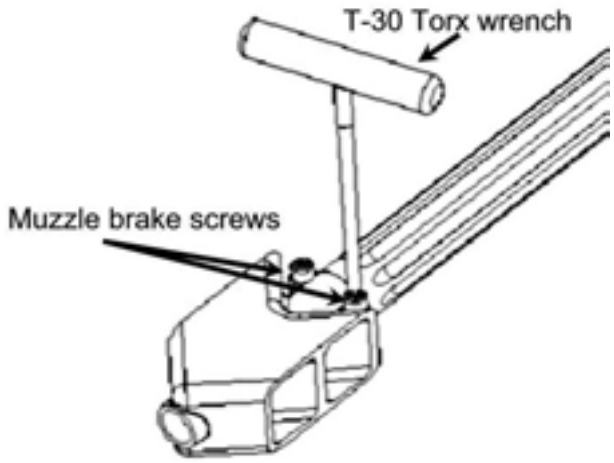


Figure 2-17a. Removing muzzle brake screws

(2) Begin by facing the rifle muzzle looking down the barrel. Place RH side muzzle brake on a hard wooden worktable while suspending aft end of rifle. The LH side of the muzzle brake should be approximately ¼ in (6 mm) above table.

(3) Use a large dead blow hammer to strike the left side of muzzle brake. (See Figure 2-17b) When muzzle brake is loose, unscrew by hand.

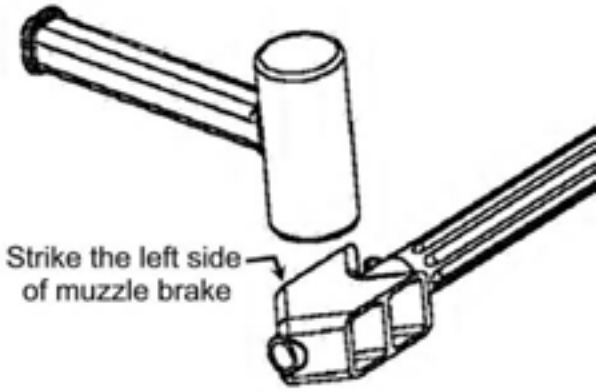


Figure 2-17b. Removing muzzle brake

(4) Remove muzzle brake shims.

3.3 REMOVAL OF BARREL KEY, BARREL SPRINGS, BARREL BUMPERS.

CAUTION

DO NOT PULL ON BARREL SPRINGS TO REMOVE THE BARREL KEY. THIS MAY CAUSE DAMAGE TO THE SPRINGS.

(1) To remove the barrel key (1), Figure 2-18, and springs (2), use the 3 mm hex wrench to remove the four barrel spring screws (3) from both the barrel key and the front barrel bushing (4) of the upper receiver (5).

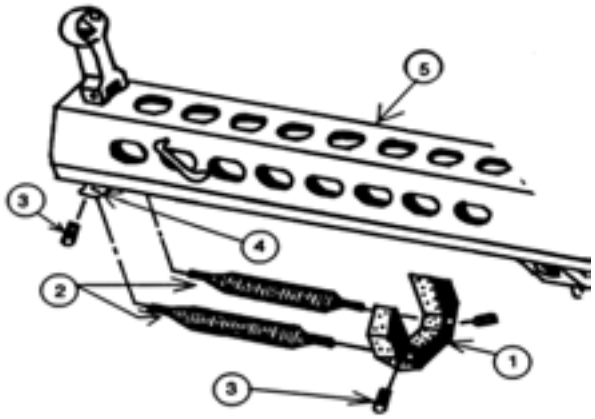


Figure 2-18. Disassembling the Barrel Key/Springs

(2) Withdraw the barrel key (1), Figure 2-19, from the slot (2) in the barrel by slowly working it out, and be prepared to assume the tension of the barrel springs (3). Slide the barrel (4), Figure 2-20, out the rear of the upper receiver (1). The impact (2) and battery (3) barrel bumpers can also be slid off the barrel.

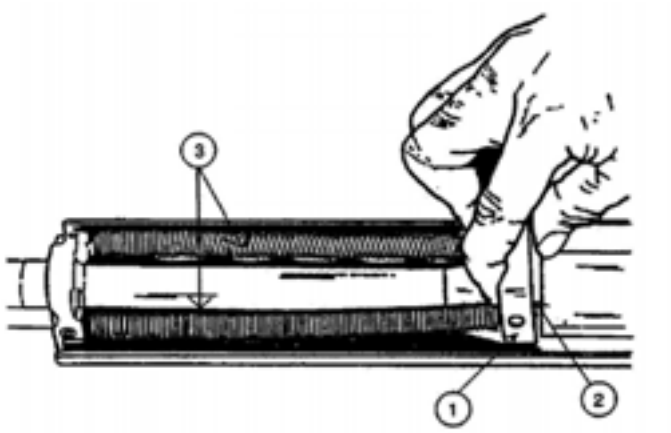


Figure 2-19. Withdrawing the Barrel Key

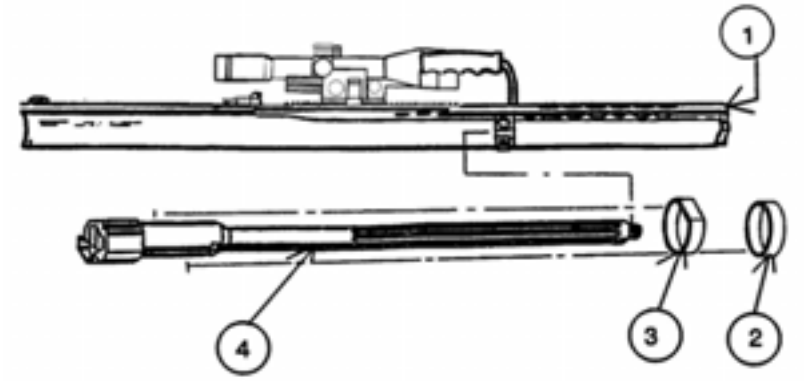


Figure 2-20. Removal of Front and Rear Barrel Bumpers

3.4 INSTALLATION OF BARREL SPRINGS, BARREL BUMPERS AND BARREL KEY.

(1) Insert one end of both barrel springs (2) into the barrel key (1). Install two barrel spring screws (3) with the 1/8 in (3 mm) hex wrench. Insert the other end of the two barrel springs into the upper receiver (4). Install the remaining two barrel spring screws (3) using the 3 mm hex wrench.

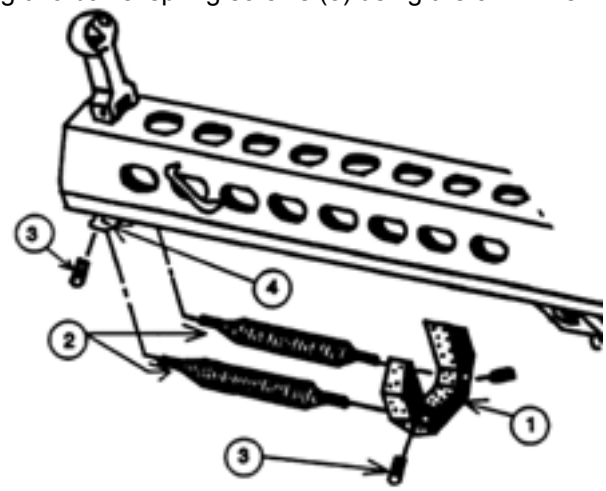


Figure 2-28. Installing Barrel Springs and Key

(2) Slide the battery barrel bumper (1), Figure 2-29, and impact barrel bumper (2) onto the barrel (3). Slide the barrel (3) into the upper receiver (4) from the rear.

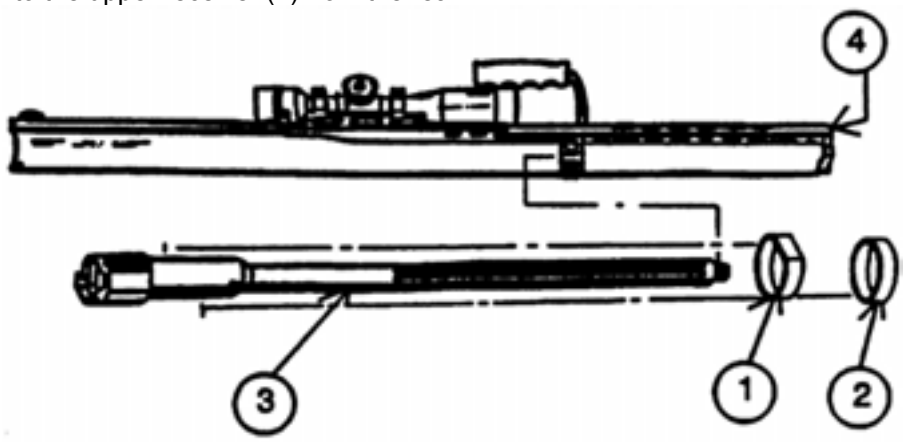


Figure 2-29. Installing Barrel Bumpers

(3) Hold the upper receiver (1), Figure 2-30, firmly with one hand. With the other hand pull the barrel key (2) toward the rear until it can be fitted into the slot (3) on the barrel.

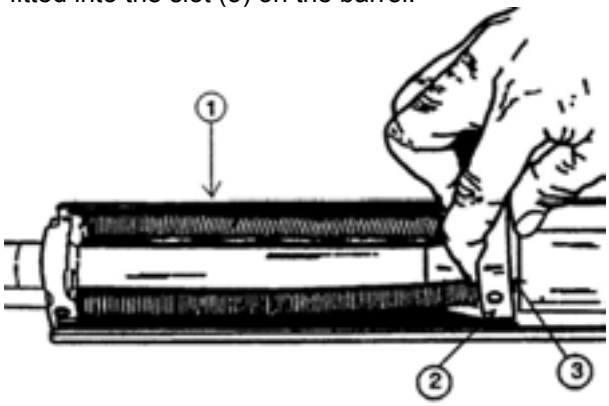


Figure 2-30. Inserting Barrel Key

WARNING

THE RIFLE MUST NOT BE FIRED WITHOUT THE MUZZLE BRAKE FIRMLY IN PLACE ON THE BARREL. SERIOUS INJURY OR DEATH MAY RESULT.

3.5 MUZZLE BRAKE INSTALLATION.

NOTE

TIME REFERENCES ARE GIVEN AS VIEWED STANDING BEHIND RIFLE.

(1) Screw the muzzle brake onto the barrel without using any shims. The goal is to hand-tighten it so that when standing behind it, it is oriented at an 10 o'clock—4 o'clock position with front sight facing upwards.

(2) If not properly aligned, (past the 10 o'clock position) use shims as necessary to ensure proper angle when hand tightened.

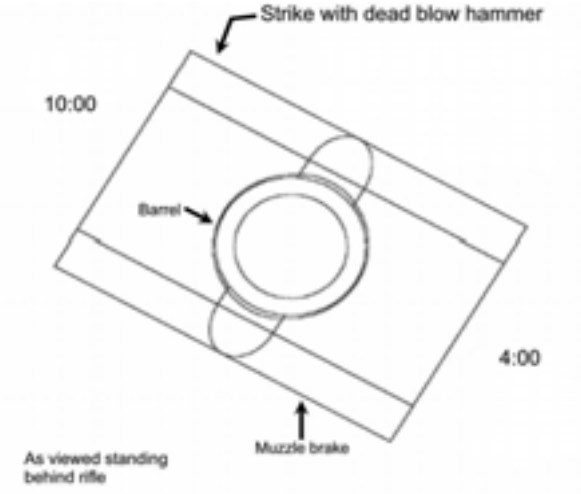


Figure 2-31. Aligning muzzle brake

(3) Use a 2 lb (1 kg) dead blow hammer and strike the left side of the muzzle brake to align it in the proper – 9 o'clock to 3 o'clock – orientation. See Figure 2-32a.

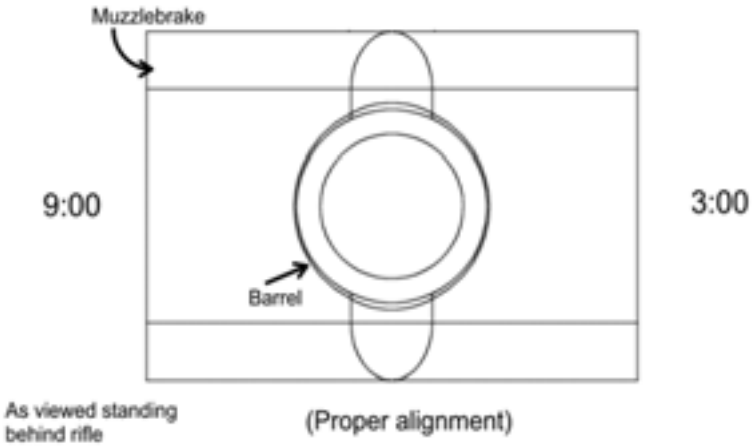


Figure 2-32a. Proper alignment of muzzle brake

(4) Insert the muzzle brake washers and muzzle brake screws.
(5) Tighten the muzzle brake screws with a torque wrench to 88-95 in-lb (10-10.8 N-m).

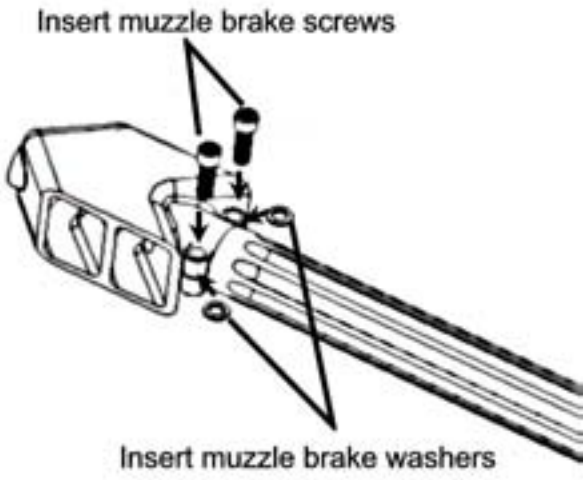


Figure 2-32b. Installing muzzle brake screws and washers

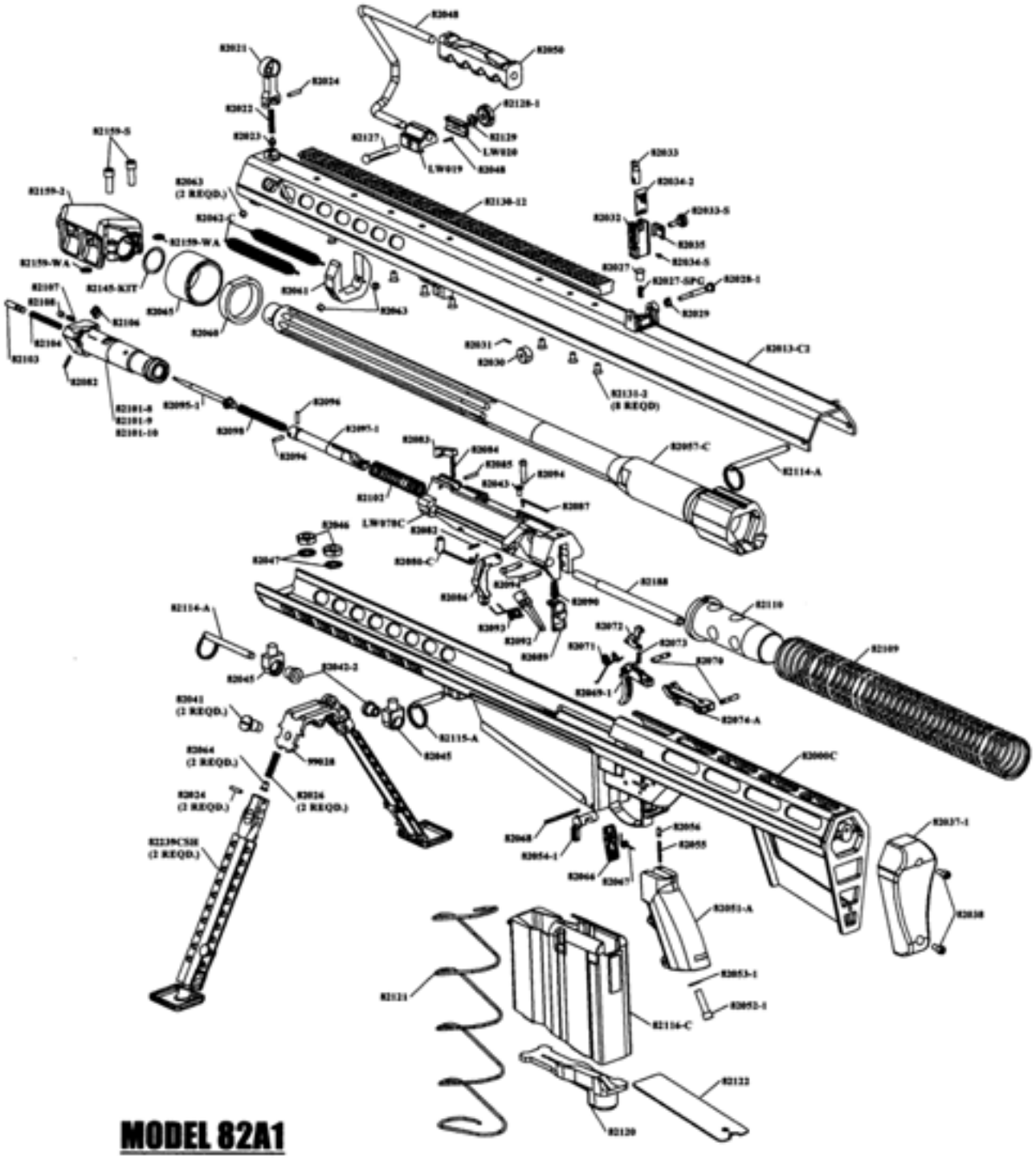
LIMITED WARRANTY

The Barrett Model 82A1 is warranted by Barrett Firearms Manufacturing Inc. to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase by the original purchaser. Under this warranty, the obligation of Barrett Firearms Manufacturing Inc. is limited to the free replacement (to the original purchaser) of any part which, under normal conditions of use, proves to be faulty because of a defect in material or workmanship. Barrett Firearms Manufacturing Inc. will not be responsible for the results of misuse, neglect, corrosion, unreasonable use, improper or defective ammunition, unauthorized alterations, or normal wear and tear. The use of nonstandard, old, damaged, corroded, or re-manufactured hand-loaded ammunition will void all warranties, expressed or implied. In order to receive warranty service, the entire firearm and damaged parts must be returned to the factory. Put warranty claim in writing and include serial number and the nature of the problem. Shipping charges to the manufacturer must be paid by the purchaser. If claim is accepted for warranty work, return shipping and insurance charges will be paid by Barrett Firearms Manufacturing Inc.

LIMITATION OF LIABILITY

The liability of Barrett Firearms Manufacturing Inc. for any and all losses and damages to the purchase shall in no event exceed the purchase price of the firearm, and then only if the firearm is proven to be defective in material or workmanship. Barrett Firearms Manufacturing Inc. shall under no circumstances be liable for incidental or consequential damages resulting from negligence of Barrett Firearms Manufacturing Inc. or from negligence or misuse of the purchaser.

Barrett Firearms Manufacturing Inc. makes no other warranties of any kind, expressed or implied with respect to the Model 82A1.


82048
82050
82021
82024
82022
82023
82128-1
82129
LW010
LW019
82048
82127
82159-S
82159-2
82063
(2 REQD.)
82062
82130-12
82033
82034-2
82033-S
82032
82035
82034-S
82027
82027-SPC
82028-1
82029
82159-WA
82159-WA
82145-KIT
82107
82108
82106
82104
82103
82082
82045
82060
82041
82043
82031
82030
82131-2
(8 REQD)
82013-C2
82095-1
82098
82096
82097-1
82096
82181-8
82181-9
82181-10
82087-C
82114-A
82083
82084
82085
82043
82094
82087
82102
LW019C
82082
82046
82047
82088-C
82094
82084
82090
82093
82092
82089
82188
82110
82109
82072
82073
82071
82070
82069-1
82074-A
82114-A
82045
82042-2
82041
(1 REQD.)
82115-A
82045
82064
(2 REQD.)
99028
82024
(3 REQD.)
82026
(2 REQD.)
82239C508
(2 REQD.)
82060C
82068
82054-1
82056
82055
82066
82067
82037-1
82038
82051-A
82053-1
82052-1
82121
82116-C
82122
82120
MODEL 82A1

PART NO.	DESCRIPTION
82000C	LOWER RECEIVER COMPLETE
82013-C2	UPPER RECEIVER COMPLETE
82021	FRONT SIGHT
82022	FRONT SIGHT SPRING
82023	FRONT SIGHT DETENT
82024	FRONT SIGHT/BIPOD PIN (3)
82026	BIPOD SPRING (2)
82027	REAR SIGHT BASE DETENT
82027-SPG	REAR SIGHT BASE SPRING
82028-1	WINDAGE SCREW
82029	WINDAGE SCREW SPRING
82030	WINDAGE KNOB
82031	WINDAGE KNOB PIN
82032	REAR SIGHT BODY
82033	REAR SIGHT POST
82033-S	REAR SIGHT POST SCREW
82034-2	REAR SIGHT SCALE (STD.)
82034-S	REAR SIGHT SCALE SCREW
82035	ELEVATION INDICATOR
82037-1	RECOIL PAD
82038	RECOIL PAD SCREW (2)
82041	BIPOD SCREW (2)
82042-2	BIPOD SHIM BUSHING (2)
82043	ACCELERATOR SPRING SCREW
82045	YOKE MOUNT (2)
82046	YOKE MOUNT NUT (2)
82047	YOKE MOUNT WASHER (2)
82048	CARRYING HANDLE STOCK
82049	CARRYING HANDLE PIN
82050	CARRYING HANDLE
82051-A	PISTOL GRIP STOCK ASSEMBLY
82052-1	PISTOL GRIP SCREW
82053-1	PISTOL GRIP WASHER
82054-1	SAFETY
82055	SAFETY SPRING
82056	SAFETY DETENT
82057-C	BARREL COMPLETE
82060	BATTERY BUMPER
82061	BARREL KEY
82062-C	BARREL SPRING ASSEMBLY (2)
82063	BARREL SPRING SCREW (4)
82064	BIPOD DETENT (2)
82065	IMPACT BARREL BUMPER
82066	MAGAZINE CATCH
82067	MAGAZINE CATCH SPRING
82068	MAGAZINE CATCH PIN
82069-1	TRIGGER

PART NO.	DESCRIPTION
82070	TRIGGER HOUSING PIN (2)
82071	TRIGGER SPRING
82072	DISCONNECTOR
82073	DISCONNECTOR SPRING
82074-A	TRANSFER BAR ASSEMBLY
82080-C	CAM PIN ASSEMBLY
82082	CAM PIN PIN/EJECTOR PIN (2)
82083	BOLT LATCH
82084	BOLT LATCH SPRING
82085	BOLT LATCH PIN
82086	ACCELERATOR
82087	ACCELERATOR SPRING
82089	SEAR
82090	SEAR SPRING
82092	COCKING LEVER
82093	COCKING LEVER SPRING
82094	BOLT CARRIER PIN (3)
82095-1	FIRING PIN
82096	FIRING PIN PIN (2)
82097-1	FIRING PIN EXTENSION
82098	FIRING PIN EXTENSION SPRING
82101-8,9,10	BOLT
82102	BOLT SPRING
82103	EJECTOR
82104	EJECTOR SPRING
82106	EXTRACTOR
82107	EXTRACTOR SPRING
82108	EXTRACTOR PLUNGER
82109	MAIN SPRING
82110	MAIN SPRING BUFFER
82114-A	REAR LOCK PIN ASSEMBLY (2)
82115-A	MIDLOCK PIN ASSEMBLY
82116-C	MAGAZINE COMPLETE
82120	MAGAZINE FOLLOWER
82121	MAGAZINE SPRING
82122	MAGAZINE FLOOR PLATE
82130-12	SCOPE BASE
82131-2	SCOPE BASE SCREW (8)
82145-KIT	MUZZLE BRAKE SHIM KIT
82159-2	MUZZLE BRAKE
82159-S	MUZZLE BRAKE SCREW (2)
82159-WA	MUZZLE BRAKE WASHER (2)
82188	ACCELERATOR ROD
82239CSH	BIPOD LEG COMPLETE (2)
99028	BIPOD YOKE
LW019	CARRYING HANDLE MOUNT
LW020	CARRYING HANDLE MOUNT CLAMP
LW078C	BOLT CARRIER COMPLETE